



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/867,124	05/29/2001	Kenichi Takahashi	09792909-5028	6485

26263 7590 04/21/2004

SONNENSCHN NATH & ROSENTHAL LLP
P.O. BOX 061080
WACKER DRIVE STATION, SEARS TOWER
CHICAGO, IL 60606-1080

EXAMINER

LEWIS, DAVID LEE

ART UNIT	PAPER NUMBER
----------	--------------

2673

DATE MAILED: 04/21/2004

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/867,124

Applicant(s)

TAKAHASHI ET AL.

Examiner

David L Lewis

Art Unit

2673

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 April 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 U.S.C. § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. **Claims 1-8 and 10-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Ulrich et al. (6369789 B1).**
3. **As in claim 1, Ulrich et al. teaches of a liquid crystal display drive method, figure 8, said liquid crystal display comprising: a first electrode located on a first substrate, figure 1 item 5, and a second electrode located on a second substrate, figure 1 item 6, said substrates facing each other with liquid crystal filled there between, figure 1 item 7, wherein pictures are displayed by means of the voltage signal impressed between said first and second electrodes to select one state of incident light: either reflected or non-reflected or either transmitted or non-transmitted or either polarized or non-polarized or twisted or non-twisted, column 1 lines 10-38, column 7 line 65- column 8 line 5, column 8 lines 18-35, and wherein drive voltage waveform consisting of a display signal**

period, **figure 8 item 82, 84, 86**, and a control signal period irrelevant to display is used within a given drive time, **figure 8 item 88**, or a period of plural frames or one frame, **figures 8 and 24b**, wherein said wherein said control signal period is shorter than said display signal period, **figure 8 item "select period" vs "non-select period"**. Wherein the display device as illustrated in figures 1 and 2 is driven as shown in figures 8 and 24b. Figure 8 illustrates a strobe pulse 88 which is followed by a negative polaritied TRIFLE pulse 90. Said display pulse corresponding to said DC balance 82, Blanking 84, and Trifle 86 pulses, and said strobe pulse 88 corresponding to the claimed control pulse, occurring within the selection period, which is shorter than the display or non-selection period Said pit planes are equivalent to said sub frames within the complete frame of 2048 slots.

4. **As in claim 2**, Ulrich et al. teaches of, wherein, in said display signal period, the drive voltage waveform for selecting the state of incident light is a combination of positive voltage signals, negative voltage signals and/or 0 V signal, during the selection period, **figure 8 item 82, 84, 86**; the absolute values of these voltages or their signal widths are different and thus the waveform has an imbalance in positive and negative charges, **figure 8 item 82, 84, 86**. **As in claim 3**, Ulrich et al. teaches of, wherein, in said control signal period, a reset voltage which has the polarity opposite to that of drive voltage waveform in said display signal period or is continuous DC voltage is impressed to suppress generation of internal DC voltage, caused by ionic polarization in the liquid crystal, **figure 8 item 80**. **As in claims 4, 13, and 18**, Ulrich et al. teaches of, wherein the

time ratio of said control signal period to the whole drive voltage waveform period is 5% or more and less than 50%, **figure 8 item selection period**. As in claims 5, 11, and 19, Ulrich et al. teaches of, **wherein a detection circuit for detecting an electric charge imbalance which occurs within a given time or a period of plural frames or one frame is used to determine the voltage polarity and level in said control signal period, thereby suppressing generation of internal DC voltage caused by ionic polarization in the liquid crystal, column 11 lines 45-65**, wherein said detection circuit for detecting an electric charge imbalance is inherently anticipated by said reverse switching threshold means.

5. As in claim 6, Ulrich et al. teaches of a liquid crystal display drive method, said liquid crystal display comprising: a first electrode located on a first substrate, **figure 1 item 5**, and a second electrode located on a second substrate, **figure 1 item 6**, said substrates facing each other with liquid crystal filled there between, **figure 1 item 7**, wherein pictures are displayed by means of the voltage signal impressed between said first and second electrodes to select one state of incident light: either reflected or non-reflected or either transmitted or non-transmitted or either polarized or non-polarized or twisted or non-twisted, **column 1 lines 10-38, column 7 line 65- column 8 line 5, column 8 lines 18-35**, wherein drive voltage waveform consisting of a display signal period, **figure 8 item 82, 84, 86**, and a control signal period irrelevant to display is used within a given drive time, **figure 8 item 88**, or a period of plural frames or one frame, **wherein said drive voltage waveform consists of a predetermined number of bit planes and the control period occurs during at least one preselected bit plane within the predetermined number**

of bit planes, **figure 8 item "select period" vs "non-select period"**; and wherein one of the two states, either on or off, is chosen to select the state of incident light in said display signal period, **figures 8 and 24b**. Wherein the display device as illustrated in figures 1 and 2 is driven as shown in figures 8 and 24b. Figure 8 illustrates a strobe pulse 88 which is followed by a negative polaritied TRIFLE pulse 90. Said display pulse corresponding to said DC balance 82, Blanking 84, and Trifle 86 pulses, and said strobe pulse 88 corresponding to the claimed control pulse, occurring within the selection period, which is shorter than the display or non-selection period Said pit planes are equivalent to said sub frames within the complete frame of 2048 slots.

6. **As in claim 7, Ulrich et al. teaches of** wherein, when one of the two states, On or Off, which is longer than the response time of said liquid crystal, is to be held, the next selection signal is applied after application of voltage signal while the desired transmittance or reflectance is being maintained, column 8 lines 20-35, wherein a line by line application is performed. **As in claim 8, Ulrich et al. teaches of** wherein, wherein said liquid crystal is a ferroelectric liquid crystal or antiferroelectric liquid crystal, column 1 lines 5-7. **As in claim 10, Ulrich et al. teaches of** wherein, wherein, in said display signal period, drive voltage waveform as a combination of positive and negative voltages and/or 0 V is used as the voltage signal to select one of the two states, either on or off, figure 8 item 82, 84, 86, figure 24a. **As in claim 11, Ulrich et al. teaches of**, wherein said drive voltage waveform is a combination of positive voltage and negative voltage signals and/or 0 V signal, figure 8 item 82, 84, 86; the absolute values of these

voltages or their signal widths are different, figure 8 item 82, 84, 86; and the waveform has an imbalance in positive and negative charges, figure 8 item 82, 84, 86, figure 24a. **As in claim 12, Ulrich et al. teaches of**, wherein, in said control signal period, a reset voltage which has the polarity opposite to that of drive voltage waveform in said display signal period or is continuous DC voltage is impressed to suppress generation of internal DC voltage, caused by ionic polarization in the liquid crystal, figure 8 items 80. **As in claim 15, Ulrich et al. teaches of**, wherein, in said display signal period, the voltage signal for selecting one of the two states, either On or Off, is a combination of positive voltages only and the voltage signal for selecting the other state is a combination of negative voltages only and such drive voltage wave form issued, figure 8 item 88 and 90. **As in claim 16, Ulrich et al. teaches of**, wherein said drive voltage waveform is a combination of positive voltage and negative voltage signals and/or 0 V signal, figure 8 item 82, 84, 86, figure 24a; the absolute values of these voltages or their signal widths are different, figure 8 item 82, 84, 86, figure 24a; and as the impressed voltage waveform in the period of selection of one state, the waveform has an imbalance in positive and negative charges, figure 8 item 82, 84, 86, figure 24a. **As in claim 17, Ulrich et al. teaches of**, wherein, in said control signal period, a reset voltage which has the polarity opposite to that of drive voltage waveform in said display signal period or is continuous DC voltage is impressed to suppress generation of internal DC voltage, caused by ionic polarization in the liquid crystal, figure 8 item 80 vs 84.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ulrich et al. (6369789 B1) in view of Sato et al. (6417828 B1) and Ogiwara et al. (6057878).**

9. **As in claim 9, Ulrich et al. teaches of the invention as found in claim 6, however Ulrich is silent as to wherein, wherein the liquid crystal display is a reflective liquid crystal display which comprises a silicone back plane and a ferroelectric liquid crystal. Sato et al. teaches of the well known reflective type display with said drive method, figure 5, column 5 lines 5--60. Ogiwara et al. teaches of said silicone back plane with a ferroelectric display of the reflective type, figure 18, column 22 lines 42-60. Wherein it would have been obvious to the skilled artisan at the time of the invention to modify the ferroelectric liquid crystal display device of Ulrich by producing a reflective ferroelectric display as suggested by Sato and Ogiwara et al., for the purpose of driving a display as taught by Ulrich, because Sato and Ogiwara suggest the device of Ulrich can be of the known reflective ferroelectric display having a silicone back plane, as found in claim 9.**

Response to Arguments

10. Applicant's arguments filed 2/23/2004 have been fully considered but are moot in view of the new grounds of rejection. **Ulrich has been reinterpreted to read on the claims language.** Wherein the display device as illustrated in figures 1 and 2 is driven as shown in figures 8 and 24b. Figure 8 illustrates a strobe pulse 88 which is followed by a negative polaritied TRIFLE pulse 90. **Said display pulse corresponding to** said DC balance 82, Blanking 84, and Trifle 86 pulses, and said strobe pulse 88 **corresponding to the claimed control pulse**, occurring within the selection (control) period, which is shorter than the display or non-selection period. Said pit planes are equivalent to said sub frames within the complete frame of 2048 slots. The blanking pulse serves as said reset pulse 84 as well as said black display pulse 80.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **David L. Lewis** whose telephone number is **(703) 306-3026**. The examiner can normally be reached on MT and THF from 8 to 5. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala, can be reached on (703) 305-4938. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Art Unit: 2673

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.



BIPIN SHALWALA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600